

REMARKS/ARGUMENTS

Reconsideration of this application in light of the above amendments and following comments is courteously submitted.

Amended independent claim 11 sets forth the following patentable features:

1. Each positive terminal of lead terminals (20) is connected to each end of a corresponding side surface in support plate (5) away from first and second semiconductor stacks (7, 8);

2. Each of first and third semiconductor elements (1, 3) has a bottom electrode electrically connected to support plate (5) through different brazing materials (14, 17);

3. First semiconductor element (1) has an upper electrode electrically connected to a lower electrode in second semiconductor element (2) through first radiating solder layer (11); and

4. Third semiconductor element (3) has an upper electrode electrically connected to a lower electrode in fourth semiconductor element (4) through second radiating solder layer (12).

As a result of the foregoing structure, the semiconductor device can utilize first and second radiating solder layers (11, 12) both which provide large electric contact areas between upper electrode of first semiconductor element (1) and lower electrode of second semiconductor element (2) and between upper electrode of third semiconductor element (3) and lower electrode of fourth semiconductor element (4). Accordingly, in addition to an increased big current capacity without deterioration in electric property of first to fourth high-power semiconductor elements (1 to 4), heavy operating current can be sent in electric paths to allow large electric current to flow through

lead terminals (20), support plate (5), first semiconductor element (1), first radiating solder layer (11) and second semiconductor element (2), and through support plate (5), third semiconductor element (3), second radiating solder layer (12) and fourth semiconductor element (4). Simultaneously, a sufficient amount of heat produced during operation of the semiconductor device can be released in two directions through first and second radiating solder layers (11, 12) and support plate (5) both of which sandwich semiconductor elements (1, 3). Moreover, first and second semiconductor stacks (7, 8) can release heat from positive terminals connected to support plate (5) to the outside of the semiconductor device.

U.S. Patent No. 6,014,313 discloses three-dimensional multi-chip modules comprising an integrated circuit chips 3, 3', thermal blocks 15, via chips 9 disposed between cooling blocks 19 and top and bottom Si-substrates 7 through inner substrates 1. Integrated chips 3, 3' and cooling blocks 19 or inner substrate 1 are stacked with sliding contact provided by the liquid material such as a grease or an oil unlike the present invention. Thus, it is apparent that the modules of '313 would not be able to provide a current path of large section area between integrated circuit chips 3, 3'. '313 does not disclose or suggest the foregoing features and advantages of the present invention as claimed.

In addition to the foregoing, it is submitted that the dependent claims submitted herewith contain patentable merit in their own right. Newly presented dependent claims 27 through 30 set forth with specificity details of the semiconductor device which are not at all shown or disclosed in the prior art references. Specifically, with regard to claim 27, the details of the negative terminals and their locations are not at all

suggested by the prior art. The same is true with regard to the arrangement of the upper electrode, cold cathode and semiconductor elements claimed as set forth in new dependent claim 28.

In light of the foregoing, it is submitted that all of the claims as pending patentably define over the art of record and an early indication of same is respectfully requested.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

It is submitted that the claims as amended herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

Respectfully submitted,

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